The Connected Public Safety Agency

How the Age of Mobility Is Transforming Public Safety Agencies

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Executive Summary

According to the United Nations, on average, more than 200 million people were affected and more than 70,000 were killed by natural disasters annually. Given the fact that one of the primary responsibilities of government is to protect the public and minimize the effects of such calamities, citizens now demand that public-sector safety organizations be proactive, and respond promptly and effectively to all types of crisis situations, including catastrophes, terror events, and threats to critical infrastructure.

To effectively respond to these challenges, public safety agencies must be able to rely on secure networks with integrated voice, video, and data capabilities. With these networks and their associated assets, agencies can obtain more timely and accurate information, enhancing situational awareness and improving response times. Cisco and our partners can help agencies obtain secure networks, which help:

- Reduce time between incident detection and response
- Empower field personnel to make decisions based on all available information
- Disseminate the right information to the right people at the right time

The Need for Change: Trends and Challenges Facing Public Safety

Public safety agencies are under increasing pressure to modernize, while also cutting costs and streamlining operations (Figure 1). At the same time, they are expected to make data more accessible to law enforcement, corrections, emergency response, courts, and national security agencies. Public safety agencies face many challenges, including:

- Budgetary restrictions and fewer resources
- Growing citizen expectations
- Workforce behavior changes
- Demand for economic development and new economic models
- Impact of crime and emergencies on the community
- Difficulties in coordinating law enforcement responses
- Delays in gathering evidence for criminal investigations and prosecutions
- Increasing number of cyber threats

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Figure 1. Pressure on Public Safety Agencies

Fewer Resources

Budgetary Challenges

Citizen Expectations

Workforce Behavior Changes

Economic Development

Next-Generation Technology

New Economic Models
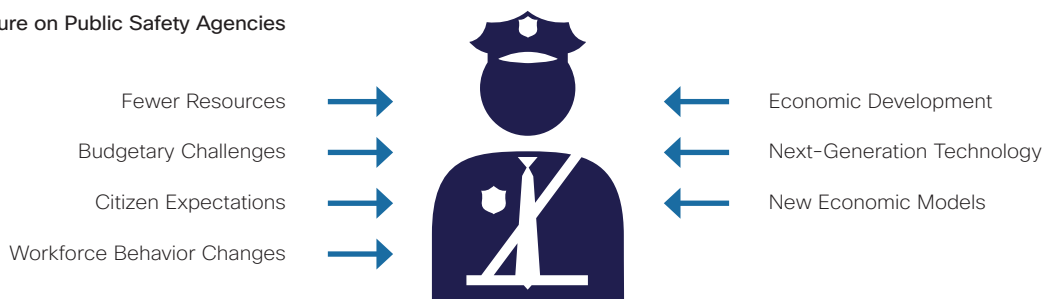
The ever-increasing connectedness of our world provides public safety agencies with many ways to meet and overcome these challenges. By connecting courts, law enforcement, and other public safety agencies, such as corrections and hospitals, collaboration technologies are going beyond efficiency alone and helping to ensure officer safety, enable informed decision making, and protect the public—all while cutting the cost of government.

The Role of Technology in Driving Transformation

With the convergence of Internet technologies and broadband wireless communications, mission-critical services for public safety emergency communications are undergoing tremendous change and growth. Challenges and requirements are increasing for public safety agencies, as well as the emergency service provider organizations (ESPOs), which provide the safety agencies with network services. The Cisco® vision addresses the communication challenges of public safety organizations by helping prevent, prepare for, respond to, and recover from emergency incidents.

Public safety and security is a complex discipline with many stakeholders under growing pressure to increase the speed and precision of decision-making processes, as well as address the increasing levels and complexity of threats and crisis events, all with the realities of reduced budgets and limited resources.

To be effective, public safety and emergency response organizations need strategies and capabilities to communicate, collaborate, and operate efficiently and effectively:

- **Communicate:** Support multiple devices (for example, radios and smartphones) and modes of communications (for example, video) that are driving the bring-your-own-device (BYOD) trend. In addition, it is crucial to map user roles and profiles to devices to support the mission with mobile applications, video communications, and surveillance for real-time incidence communications.

- **Collaborate:** Provide shared services for local public safety, national security, and defense organizations, including multi-agency and multidisciplinary collaboration to support effective decision making.

- **Operate:** Deliver intelligence- and knowledge-based tools to facilitate situational awareness and increase coordination of responses.

The Impact of the Internet of Everything on Public Safety

Today's world is becoming increasingly connected. The Internet of Everything (IoE) is emerging, with a continuous interaction among people, processes, data, and things. Sensors, networks, and smart devices are everywhere, providing a torrent of streaming data or "data in motion." Cisco is helping customers and strategic partners take advantage of the potential of IoE to achieve radical results across all sectors and industries.

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The Internet of Everything is capable of helping government organizations achieve many public policy goals, including increased economic growth and improvements in sustainability, public safety and security, delivery of government services, and productivity.

IoE is capable of helping government organizations achieve many public policy goals, including increased economic growth and improvements in sustainability, public safety and security, delivery of government services, and productivity.

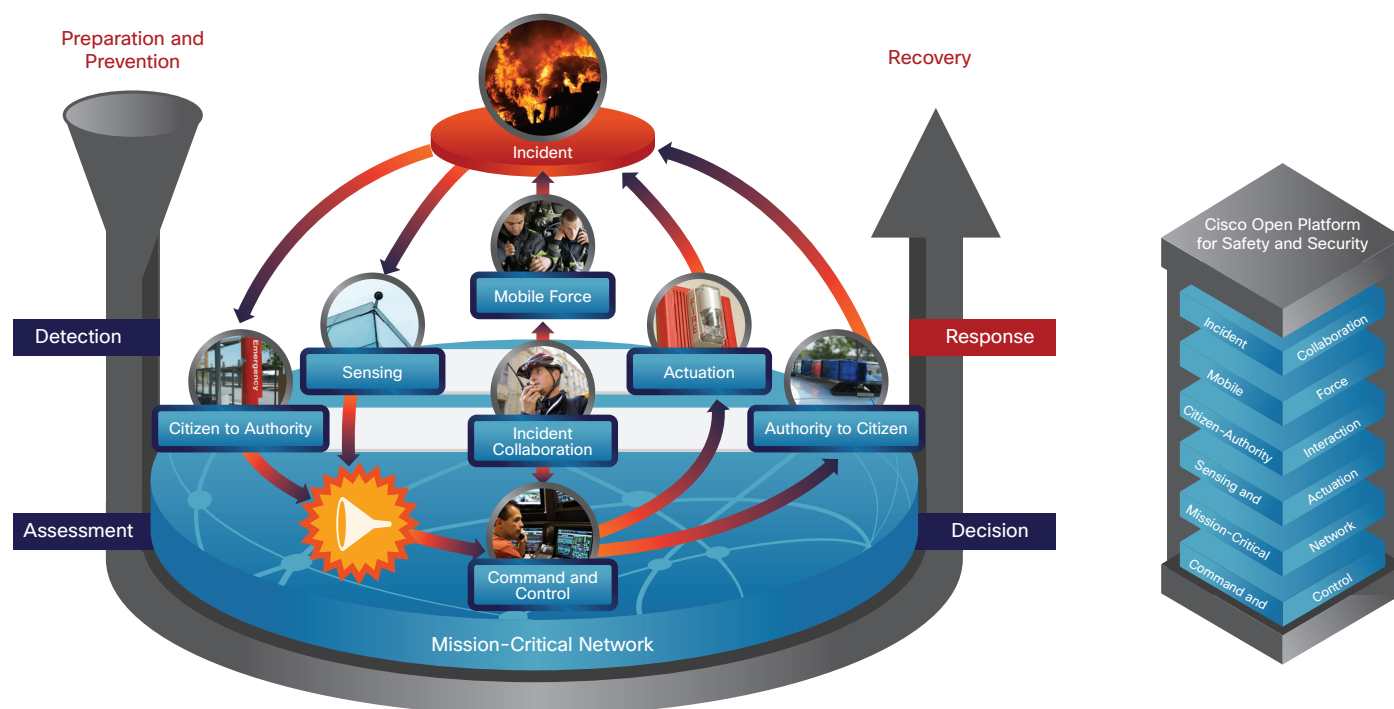## Cisco Solutions for a Connected Public Safety Agency

The Cisco Open Platform for Safety and Security framework depicted in Figure 2 shows how the mission-critical network provides the foundation for preparation and prevention, detection, assessment, decision, response, and recovery processes to address incident scenarios with integrated capabilities.

Government organizations, network operators, and service providers can now fully enable mission-critical broadband services with a complete IP long-term evolution (LTE) architecture together with a flexible Cisco Mobile Packet Core environment. This architecture provides organizations with the capability for IP LTE networks to deliver secure, mission-critical voice, video, and data at a net bit-rate capacity of 100 Mbps for the downlink stream and 50 Mbps for the uplink stream per 20 MHz channel, with the capacity for higher levels in the future.

Safety and security organizations, both public and private, can also use the Cisco Evolved Packet Core/LTE capabilities while using commercial off-the-shelf (COTS) technology for critical infrastructure, and services setup and support. They can use LTE network infrastructure, yet support secure services delivery and work with existing public safety radio and voice networks.

For more information, visit www.cisco.com/web/strategy/government/national-open-platform.html.

Figure 2. Cisco Open Platform for Safety and Security

What factors are impacting how emergency mobile communications are provided today?

· Use of commercial access technologies, such as 3G and LTE, that are already widely adopted around the world, as well as others such as Wi-Fi

· Integration with commercial networks as an access to purpose-built public safety network infrastructure and services

Establishing the Foundation to Enhance Efficiency: Premium Mobile Broadband and Cloud

Premium Mobile Broadband for Public Safety

Emergency and public safety organizations require capabilities not only for mission-critical voice, but also mobile data communication to deliver more accurate information and applications to mobile responders in the field, to off-load dispatches, and to improve efficiency through applications hosted by a secure network to the data center. In addition to basic information sharing, new sources of rich information and media are available through sensors (video cameras) and mobile devices (mobile cameras in vehicles) to provide more comprehensive, timely, and accurate information to make effective decisions.

Understanding the need for both mission-critical voice and data capabilities, the Cisco strategy is based on both services evolving into one holistic system that delivers crucial information to emergency responders and agencies. To support this transition, Cisco is focused on a flexible architecture to help ESPOs and public safety agencies evolve smoothly from existing voice environments to a mobile mission-critical information framework.

The technology landscape is undergoing rapid change with the increasing availability of mobile broadband services through the deployment of commercial 3G, 4G, LTE, and Wi-Fi networks. Public safety and ESPOs are evolving to create an environment that will support hybrid solutions that combine private radio networks, but are also using other access technologies as available. A layer of separation between the networks and the applications will allow organizations to match both user and operational requirements.

Two significant disruptions are having an impact on the current model for providing emergency mobile communications and are driven by the need to meet the growing demand for mobile data applications. The expected benefit is to have better alignment with the mobile network industry, minimizing the specificities of the public safety networks. These disruptions are:

· Use of commercial access technologies, such as 3G and LTE, that are already widely adopted around the world, as well as others such as Wi-Fi

· Integration with commercial networks as an access to purpose-built public safety network infrastructure and services

Cisco Premium Mobile Broadband (PMB), designed either as a dedicated LTE network or as a specific infrastructure that can be connected to commercial LTE networks (and also provide more advanced control capabilities), helps public safety agencies converge the critical communication services onto the LTE network. This convergence onto LTE means rich collaboration technologies, such as video calling or streaming video, can become a channel for critical communications, so first responders can collaborate and assess emergency situations like never before.

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As public safety and security agencies migrate from land mobile radio (LMR) to LTE networks, Cisco PMB can support both centralized and distributed architectures with all available LTE features, thus meeting the different deployment models, according to the network requirements.

The Cisco vision for the evolution to the next-generation public safety access network is based on an architecture composed of mobile clients, mobile transport, and mobile core networks, allowing for support of multi radio access technologies (3G, LTE, Wi-Fi, etc.). Thanks to the breadth of products and expertise acquired from the development and deployment of commercial networks for mobile service providers, Cisco can offer an end-to-end architecture for public safety networks.

Cisco offers safety and security system integrators, end users, and ESPOs Cisco Mobile Internet products and solutions, including:

- Cisco Mobile Packet Core solution consisting of the flexible Cisco Evolved Packet Core/LTE product, which supports private and dedicated LTE-based networks, and provides the necessary interfaces to integrate with commercial networks (in this case, the ESPO acts as a mobile virtual network operator [MVNO])
- Broadband mobile customer-premises equipment (CPE) routers that offer extended mobile connectivity (3G, LTE, and Wi-Fi) and can be integrated with different environments, including vehicles

This architecture relies on having the ESPOs deploy centralized core infrastructures and services. With this deployment, organizations can support both the existing (or upcoming) private radio networks and the commercially deployed networks. Because of Cisco core network flexibility, the core infrastructure can be deployed either at the national or regional level. The difference between the two models lies in the details of the specific services requirements, as well as the specific interconnection agreements with the commercial network providers.

For more information, visit www.cisco.com/c/en/us/solutions/collateral/service-provider/mobile-internet/white-paper-c11-730950.html.

Cloud Utilization

The resources of public safety organizations are being stretched thin, and as budgets contract, every facet of the organization is called upon to do more with less. As a result, agencies want to invest in technology that will help them maximize resources and reduce expenses. Cisco collaboration solutions are an excellent way to help these organizations invest to save.

New models of service delivery are making it even easier to achieve the benefits of collaboration. The Cisco Hosted Collaboration Solution (HCS) offers a cloud-based solution, which allows public safety organizations to take advantage of collaboration applications without the capital investment in infrastructure. By moving from a capital expenditures (CapEx) model to an operating expenses (OpEx) model, you can manage costs more easily. The Cisco network of Cisco HCS partners can design a solution that evolves as requirements change.

For more information, visit www.cisco.com/web/solutions/hcs/index.html.

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Improving Situational Awareness: Mobility Solutions, Video Surveillance, and Cisco IP Interoperability and Collaboration System

In dealing with unknown environments and potentially life-threatening situations, it is critical for decision makers to reduce the time from detection of an incident to response by first responders. The importance of a secure, always-on network for public safety agencies cannot be understated. These agencies must have a secure network with integrated voice, video, and data capabilities to improve response times with timely and accurate information to enhance situational awareness.

This system must allow for the dissemination of the right information (whether audio, video, pictures, etc.) to the right people at the right time. Cisco's use of a secure network to integrate various technologies and provide vital information in seconds to decision makers is key. The integration of multiple sensors, video, computer command and control, and communications greatly aids decision making and reduces the time to send responders to the scene of a crisis. In addition, this solution demonstrates how integrating these technologies across a network permits better situational awareness, and command and control in a complex environment.

Cisco AnyConnect Secure Mobility Solution

Given that every day public safety agencies routinely handle sensitive data, privacy protection and data security are top priorities. The Cisco AnyConnect® Secure Mobility Solution is powered by the industry's leading firewall: the Cisco ASA 5500 Series Adaptive Security Appliances, which offer a comprehensive suite of VPN access features along with powerful security features. With the Cisco AnyConnect Secure Mobility Solution, public safety agency administrators can provision remote access through the appropriate security policies for a variety of endpoints, from Apple Mac or Microsoft Windows environments to the latest mobile devices, using multiple access methods, such as the user-acclaimed Cisco AnyConnect Secure Mobility Client or the Cisco clientless portal for any web browser.

The Cisco AnyConnect Secure Mobility solution provides:

- Context-aware, comprehensive, and preemptive security policy enforcement
- Intelligent, easily transparent, and always-on connectivity experience
- Secure mobility across today's proliferating managed and unmanaged mobile devices

The Cisco AnyConnect Secure Mobility Client, the industry's leading client, is a multifaceted endpoint software product that not only provides VPN access through the SSL, which includes Transport Layer Security (TLS) and Datagram Transport Layer Security (DTLS) or IP Security (IPsec) Internet Key Exchange (IKEv2) protocols, but also offers enhanced security through various built-in modules, such as the Cisco Network Access Manager, the Cisco Host Scan package, and Cisco AnyConnect Web Security module. The Cisco AnyConnect Secure Mobility Client is available across the broadest set of platforms, such as Microsoft Windows, Apple Mac OS X and iOS, Linux, Android, and more.

For more information, visit www.cisco.com/c/en/us/products/security/anyconnect-secure-mobility-client/index.html.

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Cisco NERV: Rapidly Deployable Field Mobile Communications

The Cisco Network Emergency Response Vehicle (NERV) is a mobile communication center that is designed to establish interoperable communications in emergency situations. The Cisco NERV is supported by the Cisco Tactical Operations (TacOps) team, a highly skilled and dedicated team that can mobilize and respond to natural disasters and other catastrophes when normal communications infrastructures have been degraded or destroyed.

The Cisco NERV is a command and communications resource for first responders, critical infrastructure, and organizations that have been affected by a catastrophic event and require mission-critical networking to recover normal operations. It exceeds the National Incident Management System (NIMS) standards for Type II mobile communication centers.

The Cisco NERV, along with its NIMS certified team, helps organizations by:

- Arriving for disaster response missions prepared for up to four days of continuous operations without having an impact on already challenged resources
- Operating easily with police, fire, emergency medical services, the U.S. National Guard, and other responders in an incident command system or unified command structure
- Receiving 24-hour, proactive intelligence and logistical support from Cisco Security Facilities Operations Centers (SFOCs)

The Cisco NERV and TacOps teams have been deployed to support a variety of incidents, including hurricanes, tornadoes, floods, earthquakes, wildfires, and man-made disasters.

In a crisis situation, it is imperative that field communications be highly mobile and rapidly deployable. The Cisco NERV meets these demands by being a self-contained vehicle in which all technology travels together as a preconfigured package. After arrival, the Cisco NERV can:

- Be fully operational in 15 minutes
- Shut down within 15 minutes to redeploy to another location
- Power its systems with its on-board generator or a shore power connection to an external power source

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The Cisco NERV uses an IP-based network foundation because large-scale disasters require a range of interoperable communications beyond traditional push-to-talk (PTT) radio. IP-based communications ensure that the team can:

- Engage and employ all resources on site, regardless of where those resources geographically reside
- Interoperate with existing communications systems while providing a path to emerging network-centric communications systems

For more information, visit www.cisco.com/web/strategy/docs/gov/NERV_AAG.pdf.

Cisco Video Surveillance

Public safety organizations need innovative ways to increase citizen service and operational effectiveness despite flat budgets. New advances in video surveillance cameras, analytics, and automated-response capabilities help make video a powerful tool that departments can use to extend their vision and increase their speed and precision of decision making. By using networked video solutions to protect assets, prevent perimeter breaches, and collect evidence, law enforcement agencies benefit from:

- Improved citizen service levels through increased situational awareness and faster response to crime
- Increased quality of life for citizens because they feel safer
- Enhanced officer safety
- A force multiplier: more eyes in more places
- Reduced liability exposure
- Enhanced video evidence
- Ability to merge fixed and mobile video with audio and still photos, and place that data in one file jacket for case prosecution
- Reduced operational costs

Public safety agencies that take advantage of new video solutions can benefit from lower operational costs, greater situational awareness, and more effective response.

For more information, visit www.cisco.com/web/strategy/government/video_surveillance_for_situational_awareness.html.

Cisco IP Interoperability and Collaboration System

The Cisco IP Interoperability and Collaboration System (IPICS) puts the power of live mobile video and multimedia-enhanced communications into the hands of public safety personnel and provides a cost-effective way for them to communicate when using incompatible radios. This comprehensive, IP-based dispatch and incident response solution includes an enhanced dispatch console, UHF and VHF radio interoperability, emergency first-responder notification, and integration with IP phones, cell phones, PCs, and mobile devices.

Cisco IPICS helps to break down communications barriers among safety and security personnel, providing cost-effective and comprehensive interoperability between PTT radio systems, mobile phones, IP phones, and PC clients using proven IP standards across the network. When time is critical, Cisco IPICS delivers information quickly to the right people at the right time and in the right format. The Cisco IPICS solution consists of several powerful components, including:

- **Cisco IPICS server:** The server can be used to manage radio, talkgroup, channel, and media resources, authenticate users, and define policies.

- **Cisco IPICS Dispatch Console:** This IP-based radio dispatch solution empowers public safety officials to consolidate incident-related information and instantly share the information using voice, video, and data.

- **Cisco IPICS Mobile Client:** This smartphone application allows users to collaborate with other incident participants.

- **Cisco IPICS IP Phone Client:** Personnel can use Cisco Unified IP Phones to collaborate with other personnel on radio PTT channels.

- **Cisco Universal Media Service:** Audio from multicast and Session Initiation Protocol (SIP) streams can be mixed and then broadcast back to other multicast and SIP streams.

- **Cisco P25 Gateway:** This gateway uses TCP/IP standardized communications to bridge APCO P25 (Inter RF Subsystem Interface [ISSI], Console Subsystem Interface [CSSI], Digital Fixed Station Interface [DFSI]) complete standards support connecting radio networks to Cisco IPICS solutions.

- **Cisco IPICS P25 service:** Through a service contract, Cisco will develop a network readiness strategy and plan an end-to-end customer acceptance test.

For more information, visit www.cisco.com/c/en/us/products/physical-security/interoperability-systems/index.html#~one.

Increasing Real-Time Information Sharing with Cisco Instant Connect, WebEx, Jabber, and TelePresence Solutions

Cisco Instant Connect Solution

Organizations have used numerous forms of communications in efforts to increase productivity. Simple PTT solutions were an early answer. But advances in technology have introduced instant messaging, text messaging, unified communications, and collaboration applications as ways to perform group communications.

Some reasons organizations have shifted away from PTT as an attempt to reduce costs by using their existing IT infrastructure for mobile communications or to improve collaboration with mobile personnel by giving them voice, instant messaging, and video capabilities in addition to PTT services.

Pushing a button to instantly connect to a group is making a comeback; many organizations are returning to PTT instant communications to drive operational productivity in their environments. But organizations need a better PTT solution. New alternatives from carriers require a monthly fee. In addition, they might not provide coverage in all areas, hampering communications when it really counts.

The Cisco Instant Connect solution provides an economical alternative to service provider solutions for mobile communications. Your organization deploys the Cisco LMR Gateway solution, which includes the Cisco LMR over IP software in your data center. This software enables mobile personnel in your Wi-Fi coverage area to participate in PTT sessions using a Cisco Unified Wireless IP Phone or an Android device with a Wi-Fi connection. In addition, personnel who are out of the coverage area can use nearly any analog or digital radio, or smartphone or tablet with a 3G or 4G cellular connection, or satellite connection.

The major benefits of a Cisco Instant Connect solution include:

- **Low cost:** Instead of paying a monthly service provider fee for on-site personnel, you deploy an on-premises solution. The savings from eliminating monthly fees quickly pays back the one-time capital investment. Plus, the Cisco solution is based on open standards, eliminating the need to purchase, support, and manage proprietary solutions.

- **More control of the wireless coverage:** The Cisco Instant Connect solution can be expanded for in-building coverage by adding Wi-Fi access points, integrating with carrier PTT service, bridging to LMR channels, and connecting to satellite radios.

- **High quality of experience:** Cisco Instant Connect solutions can be integrated with your existing Cisco Unified Communications and Cisco Collaboration Services. Quality-of-service (QoS) and advanced-voice codecs help to provide clear voice quality, even when the network is busy. Cisco CleanAir® technology constantly identifies and works around sources of wireless interference that might otherwise affect the user experience.

- **Improved collaboration and situational awareness:** Mobile personnel can access PTT, voice, video, and instant messaging from multiple devices, including personal smartphones and tablets if your organization has a BYOD policy. Private and individual PTT sessions can be supported through Cisco Unified Wireless IP Phones in addition to group PTT sessions. Combining PTT with rich-media applications can improve decision making and situational awareness.

- **Scalability:** Cisco Instant Connect technology can support thousands of users. Managing a single system saves time and money compared to managing multiple service provider contracts, and the Android administrator privilege makes it easy to add and remove talk group users.

- **Security:** Cisco Instant Connect technology encrypts all PTT communications between the wireless access point and the Cisco Unified Wireless IP Phone using the Advanced Encryption Standard 256 (AES-256) and Wi-Fi Protected Access (WPA2) security standards. Users over carrier networks can use Cisco AnyConnect solutions to establish a VPN session between the mobile device and the system.

- **High availability:** If PTT is mission critical in your organization, take advantage of high-availability options for the wireless network, server, applications, and Cisco Unified IP Phones. For example, if the signaling connection to the server is dropped, the Cisco Unified IP Phone can automatically reconnect to a secondary server, avoiding service interruptions. In addition, mobile personnel can swap out the Cisco Unified Wireless IP Phone battery in the field, an option not available with many service providers' PTT alternatives.

- **Increased integration through use of open standards:** Cisco Instant Connect technology is based on the SIP standard, avoiding the interoperability, integration, and performance problems associated with proprietary encoding schemes.

For more information, visit www.cisco.com/c/dam/en/us/products/collateral/physical-security/ipics-server-software/aag_C45-729181.pdf.

Cisco WebEx

With Cisco WebEx® solutions, public safety agencies can improve communications between people both inside and outside of the agency. Agency budgets can be stretched while continuing key government processes by implementing an online collaboration strategy. Easy and affordable, Cisco WebEx online meetings enable agencies to boost productivity and public interaction, as well as the following:

- Share resources and ideas across multiple locations to streamline mission-critical programs while keeping information protected

- Fulfill training requirements, such as procurement policies, human resources, green initiatives, and emergency preparedness

- Meet initiatives for teleworking and continuity of operations (COOP) plans, procedures, and systems

- Communicate and promote participation with more constituents

- Do more with the resources already in place without taxing IT resources

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What You Can Do With Cisco WebEx Solutions:

· Communicate with citizens more easily

· Meet initiatives for teleworking and continuity of operations

· Fulfill training requirements

· Share information and ideas from anywhere

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It's crucial for public safety agencies to create an ongoing, interactive process to keep the agency running before, during, and—most importantly—after a major crisis event. With Cisco WebEx solutions, agencies can fortify their COOP plan with this comprehensive on-demand web solution. It allows them to maintain command, control, communication, and coordination to power a virtual emergency operations center (EOC), as well as the following:

· Create a resilient collaboration infrastructure

· Continue operations after unexpected interruptions to routine procedure

· Comply with congressional mandates, such as the Telework Improvements Act of 2009

· Supplement your emergency response plan by enabling key people to join your disaster recovery team remotely

Cisco WebEx collaboration applications are delivered on demand over the global Cisco WebEx collaboration cloud, so they're easy and affordable to implement and support. Unique to the industry, this private, intelligent IP-based switching network provides a superior collaboration experience without the inherent delay and uncertainty of the public Internet. Organizations worldwide rely on Cisco WebEx solutions because they can:

· Conduct business using the richest set of interactive data, voice, and video services

· Expect superior performance, with better than 99.99 percent, always-on reliability

· Share information confidently, using enterprise-grade protection

For more information, visit www.cisco.com/c/en/us/products/conferencing/web-conferencing/index.html.

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Cisco Jabber

The Cisco Jabber® product is a unified communications client application that can provide public safety agencies with presence, instant messaging, integrated voice, voice messaging, visual voicemail, and high-quality video-calling capabilities. Conferencing and screen-sharing capabilities are delivered with an escalation to the Cisco WebEx application. This integrated collaboration experience is designed to work with both on-premises and cloud-based collaboration architectures. Cisco Jabber solutions support the following important functions:

- Flexibility of configuration for different communications infrastructure and combinations thereof:
  - Voice and video: Cisco Unified Communications Manager
  - Video: Cisco TelePresence™ Video Communication Server (VCS), Cisco Jabber Video for TelePresence, or Cisco WebEx TelePresence solutions
  - Peer-to-peer voice and video: Cisco WebEx Messenger service
  - Presence and instant messaging: Cisco WebEx Messenger service or Cisco Unified Presence solution
  - One-tap escalation to Cisco WebEx meetings through cross-launching the Cisco WebEx Meetings application
  - Interoperability with Cisco TelePresence technology and other video endpoints
  - Sign-in with only <username@domain> and password through automatic service discovery with Domain Name System (DNS) records

For more information, visit www.cisco.com/web/products/voice/jabber.html.

Cisco TelePresence System

With the immersive Cisco TelePresence System, you can walk into a dedicated Cisco TelePresence conference room and conduct meetings with colleagues across the globe as if everyone were in the same location. With true-to-life quality and exacting details to enhance collaboration, you won't miss visual nuances. This system creates a high-quality, simple, and reliable video and audio experience. These solutions integrate modern design, a simple and consistent user experience, and state-of-the-art technology.

Cisco TelePresence System can be used by public safety agencies in many ways, including:

- Meeting with colleagues across the city or across the globe
- Continuing education and training courses and testing
- Increasing organizational productivity by reducing decision-making cycles through increased collaboration capabilities
- Conferring with remote public safety experts

By providing face-to-face collaboration without the time and cost of travel, the need to move, or the expense of bringing in experts, Cisco TelePresence System helps promote green initiatives and control costs.

For more information, visit www.cisco.com/c/en/us/products/collaboration-endpoints/immersive-telePresence/index.html.

Protecting the Network and Data: Cybersecurity

Public sector IT security budgets historically have been directed at defending the network. That's no longer sufficient because the notion of a network perimeter no longer exists. Threats can enter the network in many ways, and having comprehensive protection requires a multi-tiered approach to keep threats out and detect and isolate any breaches quickly.

The Cisco cybersecurity framework is built around the security features already embedded in core Cisco network products. This empowers organizations to discover and thwart increasingly sophisticated information and infrastructure attacks using approaches including enhanced content inspection, behavior-anomaly detection, and advanced forensics.

With Cisco network solutions, public safety organizations have a strong start on creating an effective cybersecurity plan. Cisco products offer an extensive array of threat defense, detection, and remediation capabilities, which include:

- **Cisco AnyConnect Secure Mobility Solution** supports secure access from any device to selected, appropriate information resources, based on the user's identity, security-access level, location, connection method, and time of connection.

- **Cisco Advanced Malware Protection (AMP)** solutions offer real-time threat intelligence gathered globally, enhancing local threat libraries to take a proactive stance to protecting data and networks.

- **The Cisco Cyber Threat Defense Solution** provides continuous network traffic monitoring and context information from a Cisco Identity Services Engine (ISE) to simplify and automate the detection of threats on the network, saving resources and time.

- **Cisco Secure Data Center Solution** extends network visibility into the virtual layer to protect the modern data center.

Cisco is uniquely positioned to make comprehensive cybersecurity less complicated and more practical for government and educational institutions. Cisco cybersecurity solutions and services provide consistent control across diverse and expansive network infrastructures. Now, organizations can have flexibility for deploying security in the way that best suits their objectives, with superior threat visualization, analysis, and mitigation.

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Cisco security controls are designed and deployed at the foundation level, in and around the core network, providing an adaptive, responsive, and architectural approach. This means 360-degree protection that allows institutions and agencies to discover, defend against, and quickly remediate even the most advanced threats.

For more information, visit www.cisco.com/c/en/us/solutions/ enterprise-networks/cybersecurity-solutions/index.html.

Tying It All Together: Cisco Services

From cost containment and reduction, threat and risk mitigation to providing new and innovative services, today's public safety organizations face myriad challenges and priorities. For IT teams tasked with supporting such initiatives, having the right technology solutions becomes a critical component of achieving mission success and performance goals.

However, many public safety IT systems are extremely complex and have been developed in disparate functional silos, leading to unnecessary redundancy, increasing the costs and gaps between technology solutions and the operational requirements they were designed to facilitate.

To achieve operational excellence, reduce expenses, and provide better service, public safety organizations need much more than a break-fix vendor that provides support when something goes wrong. They need a trusted, strategic partner that can help them plan, build, and manage a mission-critical application infrastructure.

As a worldwide leader in networking and the pioneer of IP-based technologies, Cisco has the expertise and best practices to help public sector organizations meet current and future challenges. Exceeding the scope of a traditional hardware vendor, Cisco has a network of resources to proactively support all IT infrastructure concerns. Public safety organizations can take advantage of services from Cisco and its partners to realize the entire business value of their technology investments. With their help, you can harness the power of the network to successfully plan, build, and manage your IT infrastructure.

Whether consulting on best-practice business and technology architectures or providing knowledge to augment your in-house capabilities, Cisco delivers a comprehensive portfolio of services for solving even your toughest operational challenges.

For more information, visit www.cisco.com/web/services/ portfolio/index.html.

Recommendations for Strategy Implementation

Public safety agencies share common challenges in carrying out their missions, whether they are police, firefighters, or paramedics. They are often faced with budgetary constraints, which can reduce manpower and force agencies to rely on outdated equipment at times.

The public safety community would do well to share a common approach in helping to transform and improve its systems. It can employ an approach that uses technology and up-to-date collaboration tools to get the most out of its human assets, to share ideas and methods with agencies across the country and around the world, to create cultural shifts, and to modernize teaching and training.

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What to Consider When Developing a Strategy

· Keep your community in mind and encourage idea contribution

· Do your homework by finding best practices of other public safety agencies around the world

· Create a dialogue in an online medium focused on best practices and ways to improve

· Expand your partner network to bring your vision and strategy to fruition

· Become familiar with the video and collaboration technologies of today

· Consider how to scale your technology beyond your agency

Cisco recommends the following:

· Identify those in your community who can provide thought leadership to help improve the culture, instigate change, and sponsor ideas. Think of your public safety community in broad terms; select members from across multiple, diverse areas of your city, reach out to other cities and towns, and include citizens. Help ensure that everyone can contribute to the vision and strategy, and challenge them to identify issues and develop creative approaches to solving these issues that evolve through practice. Ask all participants to imagine the possible, and then develop solutions to some of the most challenging aspects of public safety operations.

· Identify best practices that are working for public safety agencies across the globe. Learn what others are doing that is working, and identify the technologies and approaches they are using that resonate with and meet the needs of your organization and your citizenry.

· Post these practices on a social collaboration site and invite members to join. Create a dialogue for improvement with this online medium. Meet regularly over video to share ideas, discuss what works, and find ways to improve learning, training, and administration.

· Expand the definition of your partners, and encourage them to help implement your vision and strategy. Consider technology vendors, nonprofit organizations, and other institutions that can help you implement your strategy.

· Study today's video and collaboration technologies. Notice that they are easier to use, have greater reach and impact, and can help achieve your mission.

· Consider how you can scale your transformation across your city and/or state, and beyond.

While change can be daunting, the need to change can be an important catalyst for innovation. Many public sector organizations have faced and continue to face resource challenges. But those organizations that identify and drive innovation from within can often operate on a drastically reduced budget.

The Connected Public Safety Agency
How the Age of Mobility Is Transforming Public Safety Agencies

Cisco's Commitment to Enabling Connected Public Safety

For more than 20 years, governments and their public safety organizations around the world have partnered with Cisco to address challenges and achieve strategic objectives. By working closely with government leaders, we glean insights that help us design, implement, and test solutions based on best practices and our partner ecosystem. These ongoing relationships have forged thousands of proven implementations across a variety of public sector organizations, providing continuous innovation in how communities are managed and renewed.

Cisco helps government agencies build the right infrastructure and implement technologies to meet their specific needs. Cisco provides:

·   Leadership in IP networking technology, with more than 15,000 engineers and an R&D budget of more than US$4 billion

·   Strong understanding of and commitment to government

·   End-to-end network architecture, which offers superior quality of service, availability, and security

·   Breadth and depth of the Cisco product line, featuring interoperable, standards-based technologies

·   Global community of trained and certified partners

·   Cisco Capital® finance programs

Conclusion

Cisco public safety solutions enable a high-quality experience for voice, video, and mobility so that agency officials can communicate in the most natural ways possible. The Cisco architectural approach to collaboration helps organizations build for the present and the future with scalable solutions that increase efficiency while lowering costs. If your public safety organization is challenged to do more with less, Cisco solutions can help you invest to save, and to increase performance while lowering costs.

For More Information

To learn more about recommended strategy implementation and how Cisco can help you transform your public safety organization, visit us at www.cisco.com/go/uspublicsafety or contact us at publicsafetyandjustice@cisco.com.